REMARKS

Applicants have carefully reviewed the Office action from the Examiner dated May 17, 2005 and respectfully request reconsideration. The above amendments and these remarks are submitted in response to the Office Action. Claims 1-2, 4-12, and 14-28 are now pending in this case for prosecution. Claim 28 has been added. Claims 1,4,5, and 12 have been amended. Claims 1, 14, 23 and 28 are independent.

Specification

The Examiner's objection to the amended title is noted and Applicants have thus amended the title to conform with the more literal aspects of the original disclosure.

Double Patenting

Claims 23-25 stand rejected under the judicially created doctrine of obviousness type double patenting as being unpatentatble over claims 1 and 7 of U.S. Patent No. 6,842,748. Applicants are submitting herewith, a terminal disclaimer in compliance with 37 CFR 1.321(c) to overcome this rejection and also state that the conflicting patent is commonly owned with this application.

Section 112 Rejections

Claims 12, 16 and 18 stand rejected under 35 U.S.C. 112, as failing to comply with the written description requirement and as being indefinite. The Examiner asserts that the claimed "non-probablistic network" is new matter that is not disclosed in the originally filed specification and is also not defined within the specification, this is inaccurate.

Applicants have introduced the term to further convey the distinction and novel aspect of the present invention in comparison to what is understood as a traditional Bayesian Network, which is probabilistic. Applicants described in the specification that a Bayesian Network

includes a probabilistic acyclic decision-graphing network that relies upon probabilistic decision making using non-directed cycles "...a conditional probability associated with each node to quantify the effect that parents have on a node and a directed acyclic graph...", Page 11, lines 13-17. The present invention was described as not including such properties. The use of the term non-probabilistic as a limitation in the claims is to convey and articulate the difference between a traditional Bayesian network and the present invention. Not withstanding the above, Applicants have modified the claims to remove the term, thus rendering the rejection moot. Applicants have used this term along with a previous term "Bayesian-type" to describe and convey a difference between a tradition Bayesian network and the present invention. There is a distinct difference between a Bayesian network and a non-probabilistic network, even though they may be variantly relatable. Bayesian networks represent probabilistic relationships between items. A non-probabilistic network such as that described by applicants represents relationships between items in an alternate fashion, which is deterministic.

Section 102 Rejections

Claims 1-2, 4-11 and 15-15, 17, 19-22 and 26-27 stand rejected under 35 U.S.C. 102(e) as being anticipated by Horvitz et al. (U.S. Patent No. 6,182,133) – Horvitz.

Generally, Horvitz is directed to and teaches a network relying upon probabilistic likelihood. Horvitz emphasizes statistical probabilistic user models. Horvitz does not teach or suggest a network based on a deterministic or non-probabilistic relationship links or the use of relationship strengths or weights. In fact, such links are contradictory to the teachings of Horvitz.

Turning specifically to the assertions of the Examiner respecting claim 1, the Examiner states among other things, that Horvitz discloses "applying an ensemble of clustering algorithms

..." and cites to col. 43, lines 14-16. Although Horvitz discusses clustering, the disclosure, context and state of the art, was such that operations of that nature are performed by a single algorithm. The step as claimed in Applicants' invention, of combining the output of multiple clustering algorithms is distinct and novel standing alone and further distinguishable when applied to a non-probabilistic classification method.

Next, the Examiner asserts that "determining a non-probabilistic (i.e. integer) weight for the relationship link, said weight proportion to the historical frequency of the selection of the combination of informational items" is disclosed by the simple rank ordering of URLs at col. 4, lines 20-47 of Horvitz. There are two noteworthy aspects relating to this assertion. First, the Examiner acknowledges as does Horvitz that there is a distinction between the Bayesian probabilistic model and a ranking model. Secondly, what Horvitz discusses is a ranking of the frequency of access to specific pages by one or more individuals e.g. page A was accessed 200 times as opposed to page B that was accessed 500 times, therefore assuming that there is room for only one more page in the cache, Page B should be loaded because it will likely be the one that the current user will want. This is distinct and separate from a weighting that is associated with the link between items, as taught and claimed by the present invention. While the present invention is not necessarily directed to Web pages, for ease of understanding and to keep the example consistent, the invention will be compared in a similar context. In the present invention, what would be weighted is the relationship link between for example page A and a page C, and the link between page B and page C. Therefore, when the current user elects page C, the weighting of the relationship of that page to the other pages is what determines which page the retrieval systems of the present invention would make available. Thus if the A-C link has a

weighting of 6 and the B-C link has a weighting of 4, page A would be made available along with page C or when page C is selected.

As to claim 2, the discussion above respecting claim 1 would be equally applicable. Detection of a plurality of informational items would involve the further steps of determining a non-probabilistic weight based on the frequency of links from a first informational item to each of the plurality of informational items, and application of an ensemble of algorithms, proportional in number to the determined weight. This approach and the steps therein are neither taught nor suggested by Horvitz.

Regarding claims 4 and 27, the Examiner asserts that Horvitz further discloses "applying an algorithm for data aging wherein the usage of the relationship link is monitored ...". The distinction here is that Horvitz teaches the aging of the documents themselves. This is contrary to Applicants' invention wherein what is aged is the values in the relationship weight. In other words, returning to the previously described web page example, Horvitz's aging would operate such that page B has been placed in cache for the last 20 minutes and it has not been used, therefore, page B needs to be removed from the cache. Conversely, Applicants' invention operates such that in the last 20 minutes the user(s) has selected page C and has not gone to page A therefore, the A-C weighting should be reduced to a value of 3 (half life). While in this case, the ageing of the invention results in the B-C link having a higher ranking, this is not necessarily always the case because as described in the specification the weighting of the aged link is halved. A-C link could have gone from a weight of 8 to a weight of 4, ranking it still higher than the B-C link thus still making the A-C link the preferred link. A second note is that the ageing of Applicants' invention does not eliminate the link, which would be synonymous to the removal of the page from cache as taught in Horvitz. Instead, the relationship strength or link weight is

diminished. Additionally, the present invention is not directed to or related to page caching like Horvitz.

Regarding claims 5-6, the Examiner asserts that Horvitz' refinement processing at col. 4 lines 50-62; col. 5, lines 11-18 and lines 55-60, teach applicants' pruning step. The discussions respecting the preceding claims are applicable hereto. Further, the pruning of Applicant's invention is a multi-step, multi-phase process that slowly degrades the perceived importance of the relationship link. A link is not just severed because it has not been utilized within a given threshold period, as taught in Horvitz. To the contrast, in the present invention, conceptual relevance over a time-window is maintained through the half-life degrading method.

Regarding claim 7, the discussion respecting claim 5 is applicable thereto. The feedback from the user enables a decaying of a link's relevance and not the elimination of the link's node or a page, as taught by Horvitz.

Regarding claim 8, the discussion above respecting claim 1 is applicable thereto. Horvitz does not teach or suggest the application of an ensemble of algorithms. Furthermore, Horvitz does not teach or suggest a weighting that is proportional to or derived from the number of algorithms that identify/determine a relationship among two or more items. At col. 33, lines 10-12, Horvitz discusses a weighting of the utility of one page over another for a given screen. The weighting "...can either be predefined or acquired from a user.". Here also, this is quite contrary to what is claimed by applicants. Applicants' invention provides a fully automated suggestion to the user of what to view next, on the basis prior relationships, rather than presenting things in an order that was predefined by a web page author or the user.

Regarding claims 9, 10, and 11, as previously stated, Horvitz does not utilize an ensemble of algorithms. Horvitz certainly does not use an ensemble of algorithms to determine a

weighting value which is then used for positioning within a list. Horvitz is not concerned with the relationship among items and thus could not possibly be utilizing independent algorithms to identify relationships, nor would Horvitz be merging the outputs of such algorithms

As to claims 14-15, 17, 19, 20-22, the discussions respecting claims 1-11 above are equally applicable. The Examiner's rejections of these claims are hereby rebutted by the preceding comments.

Claims 23-25 stand rejected under 35 U.S.C. 102(e) as being anticipated by Zellweger (U.S. Patent No. 5,630,125) – Zellweger. Zellweger teaches an information management system that enables a user to create customized information in a stand-alone computing environment. The system of Zellweger builds a menu system for a user on the basis of previous activity by the same user. To the contrary, Applicant's invention operates in and is directed to a networked computing environment. The advantages of Applicants' invention lie in the ability of one or more users to utilize in their respective interactive environment, the information and relationships gleaned from other interactive environments and other users. Applicants' have amended independent claim 23, to more specifically address the fact that the present invention advantageously and distinctly operates in a network environment and provides access to information from multiple prior system users. Accordingly and in light of the remarks herein, Applicants respectfully request the withdrawal of the Examiner's rejection of claims 23-25.

Examiner's Response to Arguments

In response to Applicants' remarks filed on 12/06/2004, the Examiner sets forth her disagreement with Applicants' argument that the present invention "does not employ a probabilistic network, but rather, a weighted or deterministic non-probablistic network...". Applicants have consistently stated and emphasized that the present invention is similar to but

distinct from a Bayesian Network, which is probabilistic. In fact, Applicants have used a number of descriptive, delineating and distinguishing terms to convey this notion. In particular, as described above, and acknowledged by the Examiner in her response, the term used by Applicants was initially "Bayesian-**type**". Applicants further disclose other distinctions of the present invention from a Bayesian network, including as recited by the Examiner "... a network structure which allow cycles ...". On page 11 lines 13- 25 of the specification, Applicants again set forth the differences. Applicants have repeatedly defined what is meant by the term "Bayesian-type Belief Network", this term has been described to mean the use of weights/values to describe relationships (as opposed to probabilities as used in a Bayesian Network), and the allowance of cycles (as opposed to the acyclic approach of a Bayesian Network).

The use of suffix terms such as "-type", "-like" and so on are a common linguistic method to indicate that something is similar to but not identical to the prefixed term. Such similarity could be in the appearance, internal component, internal operation, input requirements, resulting performance or other areas. None the less, it is generally understood that there is some distinction. Applicants in this case have specifically disclosed among other things, that the internal components and the internal operation of the present invention are quite different from a traditional Bayesian network. The present invention does not use probability, hence the assertion and claim that the invention is non-probabilistic / deterministic.

Applicants' described within the specification the non-probabilistic nature of the present invention and therein provide the basis for claiming a non-probabilistic system. To wit, on pages 13 and 14 of the specification, there is a discussion about how relationship strengths between related items in a network are developed. In table 1 of the specification, reproduced below and attached hereto as Exhibit A, when a relationship is first identified between "Informational

Items" and "Related Informational", the "Relationship Strength" for all of these connections is initially set to a value of "1".

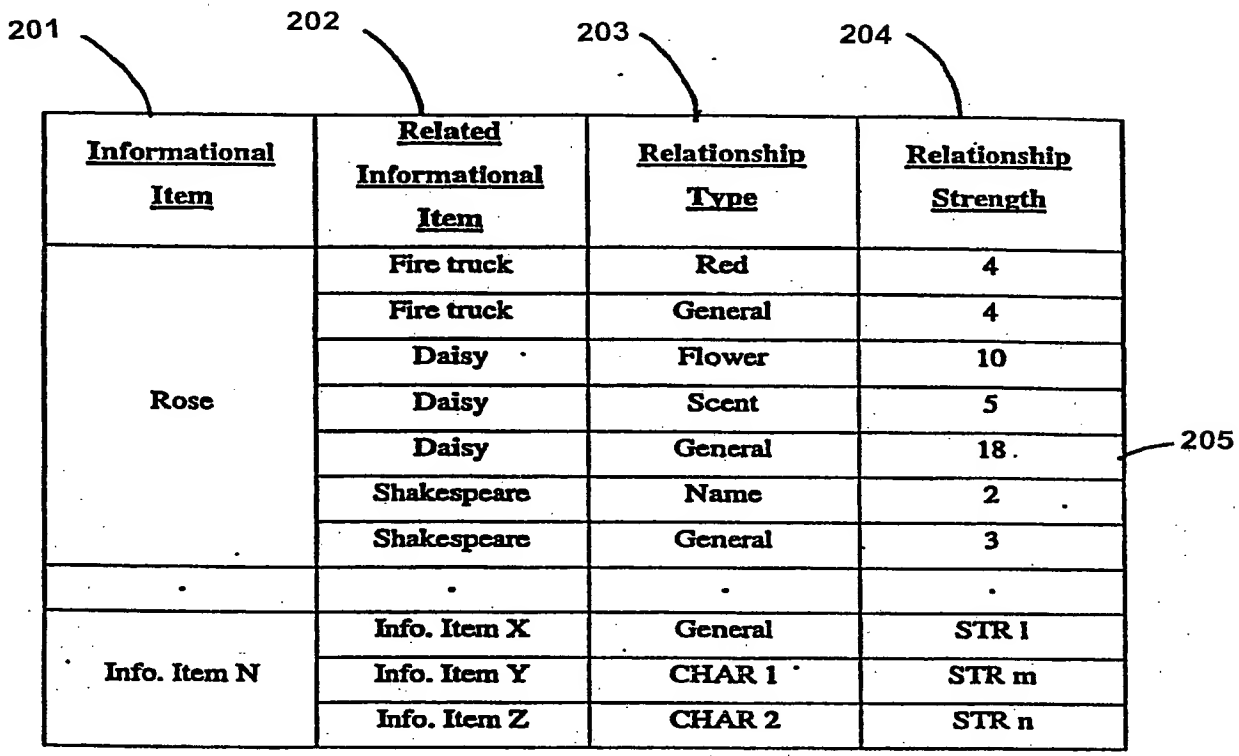
Table I

Informational Item	Related Informational	Relationship Type	Relationship Strength
Rose	Fire truck	General	1
Rose	Fire truck	Red	1
Rose	Daisy	General	1
Rose	Daisy	Flower	1
Rose	Daisy	Scent	1
Daisy	Rose	General	1
Daisy	Rose	Flower	1
Daisy	Rose	Scent	1
Fire Truck	Rose	General	1
Fire Truck	Rose	Red	1
Daisy	Fire Truck	General	1
Fire Truck	Daisy	General	1

Figures 2A and 2B of the specification reproduced herein and also attached hereto as Exhibit B and Exhibit C respectively, show how the "Relationship Strength" increases over time from a value of "1".

To further illustrate, consider a particular example from Table 1, the informational item "Rose" which has in the general relationship type category "Firetruck" and "Daisy", each of which has a relationship strength of "1". If these were probabilities, the probability of both relationships would have to sum up to 1. The present case has these summing to 2. Because a probability is effectively the likelihood of selecting an event and by the nature of the definition of probability, the likelihood for the selection of all the events together, cannot be greater than 100%.

Consider next, Figures 2A and 2B, wherein it is illustrated and then discussed within the specification that columns 204 in each figure represents relationship strengths with integer-valued numbers.



Informational Item	Related Informational Item	Relationship Type	Relationship Strength
Rose	Fire truck	Red	4
	Fire truck	General	4
	Daisy	Flower	10
	Daisy	Scent	5
	Daisy	General	18
	Shakespeare	Name	2
	Shakespeare	General	3
.	.	.	.
Info. Item N	Info. Item X	General	STR 1
	Info. Item Y	CHAR 1	STR m
	Info. Item Z	CHAR 2	STR n

FIG. 2A.

Turning specifically to Fig. 2A, we look at relationships from informational item "Rose" to the general relationship types. There is "Firetruck", "Daisy", and "Shakespeare" each having a general relationship type. "Firetruck" has a relationship strength of "4", "Daisy" has a relationship strength of "18" and "Shakespeare" has a relationship strength of "3". Importantly, these relationship strengths do not sum to 1 nor do they sum to 100%, hence they are not probabilities.

Consider even further, that in Fig. 2B there is a change in relationship strengths.

201 Informational Item	202 Related Informational Item	203 Relationship Type	204 Relationship Strength
Rose	Fire truck	Red	4
	Fire truck	General	4
	Daisy	Flower	11
	Daisy	Scent	6
	Daisy	General	19
	Shakespeare	Name	2
	Shakespeare	General	3
.	.	.	.
Info. Item N	Info. Item X	General	STR 1
	Info. Item Y	CHAR 1	STR m
	Info. Item Z	CHAR 2	STR n

206

FIG. 2B.

Specifically, the "Daisy" general relationship increased to a value of "19", but the "Firetruck" stayed at "4" and Shakespeare stayed at "3". What this represents and means is that one of the relationship strengths was increased, without proportionally decreasing the other. This is contrary to any probabilistic approach. In a probabilistic system (i.e. a traditional Bayesian, See Page 11) there would have to be a proportional decrement of one value when another is increased, because the sum of the parts can never be greater than the whole, the total

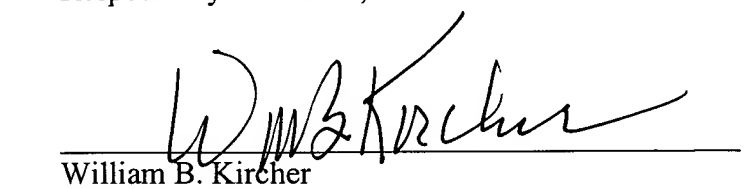
of all probabilities in a set must sum to 1 or 100%. In order to maintain a consistent probability equaling 100% likelihood of selecting something, if one weight is increased, another has to be decreased. Applicant's invention as described and claimed allows for example as explained above, independent increase of a single relationship strength without a decrement of other strengths to maintain a consistent 100% likelihood for selecting an item, this is clearly different from a traditional Bayesian approach.

For the reasons stated above the claims as presented herein are in condition for allowance. Further, there is sufficient disclosure with the present application to support the amended claims, which clearly are not anticipated or obvious in view of Horvitz or Zellweger. Applicants respectfully request withdrawal of the pending rejections and a Notice of Allowance of the pending claims.

If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's amendment, or if the Examiner should have any questions regarding the present amendment, it is respectfully requested that the Examiner please telephone Applicant's undersigned attorney in this regard.

Respectfully submitted,

Date: 10/13/2005



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In step **406**, for each newly created record, an initial value for the respective relationship weight is assigned, e.g., an initial value of 1. For example, if none of the pairs has an existing relationship record, then after the operations of steps **403** and **404**, the resulting new records may be as shown in Table I below:

Table I

Informational Item	Related Informational	Relationship Type	Relationship Strength
Rose	Fire truck	General	1
Rose	Fire truck	Red	1
Rose	Daisy	General	1
Rose	Daisy	Flower	1
Rose	Daisy	Scent	1
Daisy	Rose	General	1
Daisy	Rose	Flower	1
Daisy	Rose	Scent	1
Fire Truck	Rose	General	1
Fire Truck	Rose	Red	1
Daisy	Fire Truck	General	1
Fire Truck	Daisy	General	1

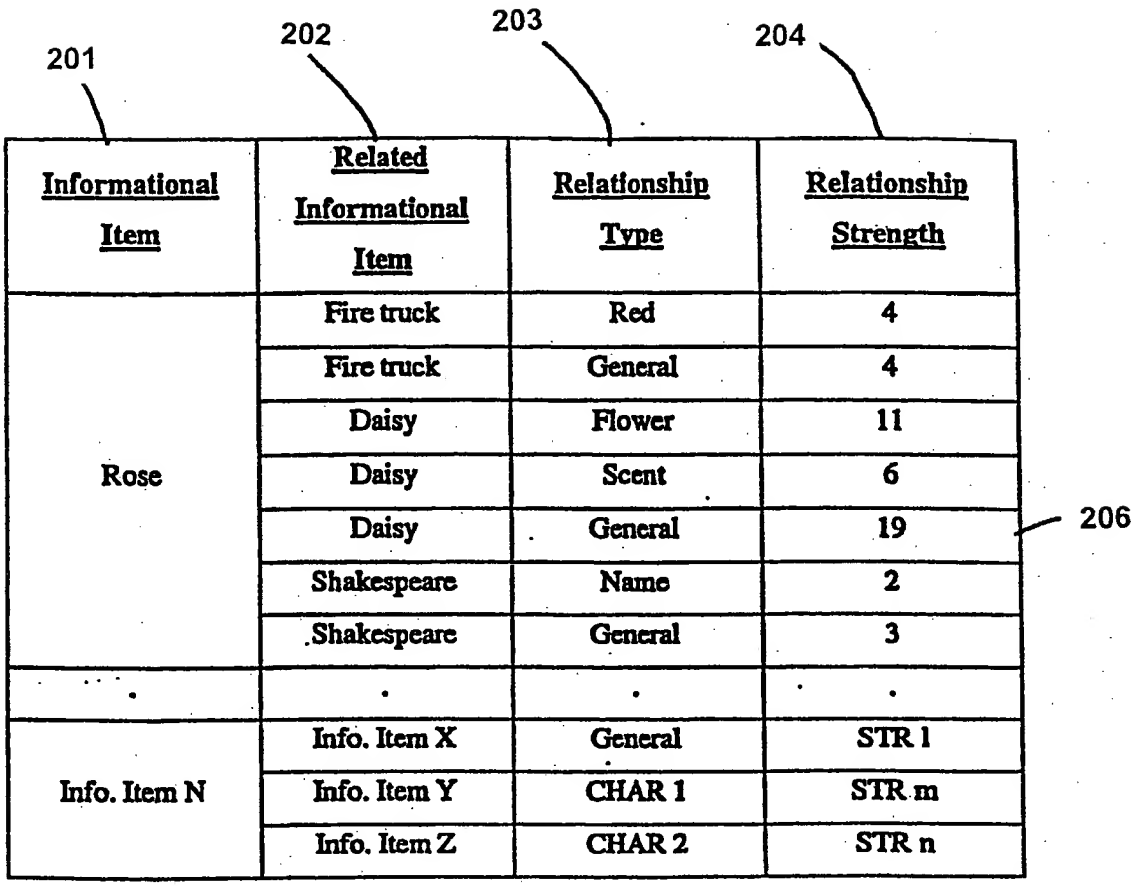
In step **407**, the Bayesian-type Network database **107** is updated to reflect the newly created records and/or the relationship strength(s) adjustment(s). In one embodiment of the present invention, the database **107** is updated in real time, whenever a new record is created or a relationship strength adjustment is made. In an alternative embodiment, the database may be updated off-line by collecting the navigational history of users of the information retrieval system in one or more history log file.

201 202 203 204

Informational Item	Related Informational Item	Relationship Type	Relationship Strength
Rose	Fire truck	Red	4
	Fire truck	General	4
	Daisy	Flower	10
	Daisy	Scent	5
	Daisy	General	18
	Shakespeare	Name	2
	Shakespeare	General	3
.	.	.	.
Info. Item N	Info. Item X	General	STR l
	Info. Item Y	CHAR 1	STR m
	Info. Item Z	CHAR 2	STR n

205

FIG. 2A.



Informational Item	Related Informational Item	Relationship Type	Relationship Strength
Rose	Fire truck	Red	4
	Fire truck	General	4
	Daisy	Flower	11
	Daisy	Scent	6
	Daisy	General	19
	Shakespeare	Name	2
	Shakespeare	General	3
. . .	.	.	.
Info. Item N	Info. Item X	General	STR 1
	Info. Item Y	CHAR 1	STR m
	Info. Item Z	CHAR 2	STR n

FIG. 2B.